



A Preliminary Taxonomic Account of the Family Caesalpiniaceae of Rajshahi

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General Note



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ABSTRACT

The present research paper focused on the family Caesalpiniaceae of Rajshahi was carried out. A total of 19 species under 9 genera belonging to the family Caesalpiniaceae were collected and identified. Out of the total number of species, *Bauhinia acuminata* L., *Caesalpinia pulcherrima* (L.) Swartz., *Cassia fistula* L., *Delonix regia* Raf., *Tamarindus indica* L., *Senna sophora* (L.) Roxb., *Senna tora* (L.)

Roxb., *Saraca indica* L., *Peltophorum pterocarpum* (DC.) K. Heyne. were dominant, *Cassia grandis* L., *Senna occidentalis* Roxb., *Senna siamea* (Lamk.) Irwin & Bar., *Senna alata* (L.) Roxb. were frequent and *Bauhinia purpurea* L., *Bauhinia variegata* L., *Brownea coccinea* Jacq., *Caesalpinia bonduc* (L.) Roxb., *Cassia javanica* L., *Cassia renigera* Wall ex Benth. were rare species in the study area. For each species, the nomenclature has been brought updated and the synonyms, local name, English name, flowering time, chromosome number, taxonomic description, native and medicinal uses have been provided.

Keywords: Preliminary Taxonomic Account, Caesalpinaceae, Rajshahi, Bangladesh

1. INTRODUCTION

Geographical distribution: The Caesalpinaceae are mostly tropical and subtropical trees and shrubs comprising about 180 genera and 3,000 species. About 23 genera and 85 species of this family have been reported from India. Some of the large represented genera along with their number of approximately reported species include *Cassia* (500-600), *Bauhinia* (300), *Senna* (250), *Chamaecrista* (250), *Caesalpinia* (100), *Gleditsia* (11) and *Cersia* (7) (Sharma, 2004). The family Caesalpinaceae consists of 150 genera and 2,200 species, distributed mainly in tropical and subtropical regions, but only few species occur in temperate regions. In Bangladesh, this family is represented by 19 genera and 69 species (Ahmed *et al.*, 2008).

Taxonomic description : The leaves are stipulate, alternate, and mostly pinnately compound but may be bipinnate or simple. Like the other legume families the petiole base is commonly enlarged into a pulvinus. The flowers are in racemes, spikes or cymes, are zygomorphic, and are mostly weakly to strongly perigynous. The perianth commonly consists of a calyx and corolla of 5 segments each; the petals are distinct, overlapping (i.e., imbricate) in bud, with the posterior one (flag or banner) innermost in position. The androecium usually consists of 1-10 distinct or variously united stamens, some of which are commonly reduced to nonfunctional staminodes. The pistil is simple, consisting of one style and stigma, and a superior ovary with one locule containing 2-many marginal ovules. The fruit is usually a legume.

Taxonomic position:

Division	: Magnoliophyta
Class	: Magnoliopsida
Subclass	: Rosidae
Order	: Fabales
Family	: Caesalpinaceae (Cronquist, 1981)

Economic importance: Economically the plants of the family Caesalpinaceae are of fairly great importance. The plants are either ornamental or of medicinal values. A few plants have food and other values. The plants of the family are used as sources of food and beverage, fodder, medicinal, industrial, ornaments, chutney, timber, fibre, fuel, etc. The leaves and flower buds of *Bauhinia variegata* L. are used as vegetables. The fruits of *Tamarindus indica* L. are spicy and used as condiment. The young leaves of *Senna tora* (L.) Roxb. are made into vegetables. The seeds of *Tamarindus indica* L. yield starch. Twigs of *Cassia fistula* L. are used as fodder. The pulp of the pods of *Cassia fistula* L. is utilized as a purgative. The bark decoction of *Saraca indica* L. is used as a remedy for menstrual disorders. The leaves of the *Senna alata* (L.) Roxb. are used to cure ring worm and skin diseases. The roots of *Chamaecrista mimosoides* (L.) Greene are given in spasms of stomach. The leaf juice of *Senna tora* (L.) Roxb. is an excellent cure to malaria. Dried leaves and flower buds of *Bauhinia tomentosa* L. are given in dysentery. The bark of *Saraca indica* L. is used in uterine disorders. The fruits of *Tamarindus indica* L. possess carminative and laxative properties (Shukla and Misra, 1979).

Review of literatures: The importance of studying local floristic diversity has been realized and carried out in Bangladesh by Khan and Banu (1972), Khan and Hassan (1984), Khan and Huq (2001), Rahman (2013a, 2013b, 2013c), Rahman *et al.* (2007a, 2007b), Rahman and Akter (2013), Rahman *et al.* (2014), Rahman and Rahman (2014), Arefin *et al.* (2011), Islam *et al.*, (2009), Hossain *et al.*, (2005), Rahman *et al.* (2013), Tutul *et al.*, (2010) and Uddin *et al.* (2010, 2013). The present study was made taxonomic account of the family Caesalpinaceae of Rajshahi, Bangladesh.

2. MATERIALS AND METHODS

Study area: Rajshahi district is a district in north-western Bangladesh. It is a part of the Rajshahi division. The Rajshahi district is bounded by Naogaon district to the north, Natore district to the east, and Chapai Nawabganj district and the river Padma to the south. The Rajshahi district has a sub-tropical monsoon climate, typical of Bangladesh, which falls within a low rainfall zone of the country. 75 percent rainfall occurs during June–September. The annual rainfall is 1350 mm. Temperature of the area is low in January varies from 9.0°C to 14.1°C. From February an increasing trend of temperature is found up to April and thereafter temperature start to decline. In April temperature varies from 22.6°C to 36.9°C. The mean relative humidity is found to be low in March (65%) and high in July–September (88–89%) (BBS, 2009).

Methodology: A preliminary taxonomic account of the family Caesalpiniaceae was carried out from July 2009 to June 2010. A total of 19 species belonging to 9 genera of the family Caesalpiniaceae were collected and identified. A survey on the determination of the location of different species was made and a list was prepared to be acquainted with the plants available in the selected area. All the species were noted and time to time the areas were visited to see when they flowered. For the morphological study, different types of species were examined again and again in order to see if there was any variation or not. They were collected at flowering stages and herbarium specimens were prepared as vouchers. In this practice standard method was followed. In this regard different types of plant species were collected from different habitats. All the collected plant specimens were kept in the Herbarium, Department of Botany, and University of Rajshahi, Bangladesh.

Plant Identification: The major collected materials were identified and described up to species with the help of Hooker (1961), Prain (1963), Kirtikar and Basu (1987) and Ahmed *et al.* (2008) were consulted. For the current name and up-to-date nomenclature Pasha and Uddin (2013) and Huq (1986) were also consulted.

3. RESULTS AND DISCUSSION

A preliminary taxonomic account of the family Caesalpiniaceae was carried out. A total of 19 species belonging to 9 genera of the family Caesalpiniaceae were collected and identified. Out of the total number of species, *Bauhinia acuminata* L., *Caesalpinia pulcherrima* (L.) Swartz., *Cassia fistula* L., *Delonix regia* Raf., *Tamarindus indica* L., *Senna sophora* (L.) Roxb., *Senna tora* (L.) Roxb., *Saraca indica* L., *Peltophorum pterocarpum* (DC.) K. Heyne. were dominant, *Cassia grandis* L., *Senna occidentalis* Roxb., *Senna siamea* (Lamk.) Irwin & Bar., *Senna alata* (L.) Roxb. were frequent and *Bauhinia purpurea* L., *Bauhinia variegata* L., *Brownea coccinea* Jacq., *Caesalpinia bonduc* (L.) Roxb., *Cassia javanica* L., *Cassia renigera* Wall ex Benth. were rare species in the study area. For each species, the nomenclature has been brought updated and the synonyms, local name, English name, flowering time, chromosome number, taxonomic description, native and medicinal uses have been provided. The collected information is comparable with the result of other studies in Bangladesh. A total of 4 genera and 7 species were recorded in Lawachara National Park (Uddin and Hassan., 2010). A total of 5 genera and 11 species were recorded in Teknaf Wildlife Sanctuary (Uddin *et al.*, 2013). A total of 4 genera and 5 species were recorded in Munshiganj district (Rahman *et al.*, 2013). A total of 2 genera and 3 species are documented in Habiganj district (Arefin *et al.*, 2011). A total of 7 species belonging to 6 genera were recorded in Khagrachhari district (Islam *et al.*, 2009). A total of 7 species belonging to 4 genera were recorded in Runtia Sal Forest (Tutul *et al.*, 2010). A total of 5 species belonging to 3 genera were recorded in Comilla, Bangladesh (Hossain *et al.*, 2005). No published information recorded on the family Caesalpiniaceae of Rajshahi, Bangladesh.

By examining the plant materials collected from the study area using the identification methods and medicinal information was accumulated and described below.

3.1. *Bauhinia acuminata* L.

Synonyms: *Bauhinia candida* auct.non Ait. *Bauhinia grandiflora* auct. Non Blanco.

Local name: Shada-Kanchan

English name: White Bauhinia, Mountain Ebony

Taxonomic description: A small evergreen to semi-deciduous tree. Leaves slightly cordate, 7–17 cm long, 2-lobed, lobes acute or subobtusate, not reaching half way down. Racemes axillary, short peduncled, corymbose. Calyx 2.5–3 cm, narrowed into a long point, cleft at the tip. Petals oblong, white. Pods 10–12.5 cm long, oblong, flat.

Native: China, India, Indonesia, Laos, Malaysia, Myanmar, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: May to July

Chromosome number: $2n = 26, 28$ (Kumar and Subramaniam, 1986).

Medicinal Uses: Decoction of the bark or leaves is used in biliousness, bladder stone, leprosy and asthma. It improves digestion. Decoction of root boiled with oil and applied to burns (Ghani, 2003).

3.2. *Bauhinia purpurea* L.

Synonyms: *Bauhinia coromandeliana* DC., *Bauhinia triandra* Roxb., *Phanera purpurea* (L.) Benth.

Local name: Rakta Kanchan

English name: Butterfly Tree

Taxonomic description: It is a small to medium-sized evergreen to semi-evergreen tree. Leaves rather longer than broad, shallowly cordate, two-lobed. Flowers large, rosy-purple, in few flowered terminal and axillary, brown-tomentose corymbs. Petals oblanceolate, with a long claw, twice the calyx. Pods 15-25 cm long, ligulate, flat pointed.

Native: Bhutan, India, Pakistan, Myanmar, Nepal, Sri Lanka and Thailand. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: November to May

Chromosome number: $2n = 26, 28$ (Kumar and Subramaniam, 1986).

Medicinal Uses: The plant is used in dropsy, pain, rheumatism, thigh swelling, convulsion, delirium fabrics, *Datura* intoxication and blackness of lip or tongue. Bark acts as an astringent in diarrhoea; its decoction is used as a wash in ulcers (Ghani, 2003).

3.3. *Bauhinia variegata* L.

Synonyms: *Bauhinia candida* Ait., *Phanera variegata* (L.) Benth.

Local name: Bilati Kanchan

English name: Variegated Bauhinia.

Taxonomic description: A medium sized-deciduous tree, trunk short, barks nearly smooth with vertical cracks, 6-12 m tall. The leaves are shaped a little like a cow's hoof. Some cultivars have leaves with white variegations. The flowers are reminiscent of showy orchids, with five irregular, usually slightly overlapping petals in shades of magenta, lavender or purplish blue. The flowers often make their first appearance in late winter while the tree is bare of leaves. The blooming period then lasts until early summer. Fruit a pod, oblong, flat, glabrous, slightly curved, hard with short stripe, dehiscent, 10-15 seeded.

Native: Bhutan, China, India, Myanmar, Nepal, Pakistan and Sri Lanka. This is widely cultivated in the tropics. In Bangladesh, this species is found all over the country (Ahmed *et al.*, 2008).

Flowering time: February to April.

Chromosome number: $2n = 28$ (Kumar and Subramaniam, 1986).

Medicinal Uses: Not known.

3.4. *Brownea coccinea* Jacq.

Synonyms: *Brownea capitella* Jacq., *Brownea latifolia* Jacq.

Local name: Pakhi Phal, Supti

English name: West Indian Mountain Rose

Taxonomic description: A small, evergreen tree, up to 7 m high with dense shady foliage, branches drooping and spreading, develop from near the base of the trunk. Leaves paripinnately compound, up to 30 cm long, alternate, leaflets 5-10 pairs. Flowers scarlet red. Fruit a pod, almost 20 cm long, scimitar shaped, compressed, curved and flat. **Native:** Native of Jamaica, introduced and widely cultivated in many countries. In Bangladesh, this species is planted throughout the country (Ahmed *et al.*, 2008).

Flowering time: February to May

Chromosome number: $2n = 24$ (Kumar and Subramaniam, 1986).

Medicinal Uses: Not Known.

3.5. *Caesalpinia bonduc* (L.) Roxb.

Synonyms: *Guilandinia bonduc* L., *Guilandinia bonducella* L., *Caesalpinia bonducella* (L.) Fleming.

Local name: Nata

English name: The Fever Nut, Indian Nut

Taxonomic description: An extensive climber. Branches armed with hooked and straight hard yellow prickles. Leaves bipinnate, 30-60 cm long, petioles prickly. Flowers in dense long-peduncled terminal and supra axillary racemes, 15-25 cm long. Petals oblanceolate, yellow. Pods oblong, densely armed on the faces with wiry prickles. Seeds oblong, lead-coloured, 1.3 cm long.

Native: China, Hong Kong, India, Malay, Peninsula, Myanmar, Singapore, Sri Lanka and Taiwan. It is widely distributed near oceans in warmer regions and tropics. In Bangladesh, this species is found throughout the country (Ahmed *et al.*, 2008).

Flowering time: July to March

Chromosome number: $2n = 24$ (Kumar and Subramaniam, 1986).

Medicinal Uses: Young leaves are used in intermittent fever and for expelling intestinal worms. Decoction of the seed is used in kidney troubles and blood pressure. It is also useful against consumption and asthma (Ghani, 2003).

3.6. *Caesalpinia pulcherrima* (L.) Swartz.

Synonym: *Poinciana pulcherrima* L.

Local name: Radhachura, Chotokrisnachura

English name: Peacock Flower, Paradise Flower.

Taxonomic description: A branchy ornamental shrub, almost unarmed with few prickles. Leaves bipinnate. Racemes terminal, very broad; the lower pedicels 7.5-10 cm long. Flowers yellow or reddish yellow; petals round, crisped, with a very distinct claw; Filaments 3-4 times the length of the corolla. Pods 5-7.6 cm, long, thin, ligulate, flat nearly straight.

Native: Native of South America and cultivated throughout the tropical countries. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: September to November

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: The plant is considered tonic and stimulant. Roots are astringent; given in cholera. Infusion of the flowers is febrifuge; prescribed in bronchitis, asthma, malarial fever, intestinal worms, coughs and chronic catarrh. Decoction of the wood is considered emmenagogue; useful in diarrhoea and dysentery; given internally in skin diseases (Ghani, 2003).

3.7. *Cassia fistula* L.

Synonyms: *Cathartocarpus fistula* (L.) Pers., *Cassia rhombifolia* Roxb.

Local name: Sonalu, Badar Lathi

English name: Pudding Pipe tree, Golden Shower Tree

Taxonomic description: A small to medium, deciduous tree. Leaves compound, 23-40 cm long; leaflets 4-8 pairs, ovate or ovate-oblong, acute, 5-12.5 cm long. Flowers in lax pendulous racemes, 30-50 cm long. Corolla 3.8 cm across, yellow. Pods 30-60 cm long, pendulous, cylindric, straight, brown-black.

Native: Native of tropical Asia including India, Sri Lanka, Pakistan, Bhutan, Malaysia, Thailand and spread throughout the tropics. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: March to June

Chromosome number: $2n = 24, 28$ (Irwin and Turner, 1960).

Medicinal Uses: Seeds are given in jaundice. The fruit is reported to be used in Jaundice and diabetes. Root, seeds and leaves also possess purgative properties. The bark and the wood are given in dysentery. Root is tonic; useful in fever and heart diseases. The leaves are laxative and antiperiodic; useful in ulcers, inflammation and rheumatism; juice of the young leaves is used to cure ringworms. Pulp of the fruit is an agreeable laxative, safe for children and pregnant women; given in liver disorder (Ghani, 2003).

3.8. *Cassia grandis* L.

Synonyms: *Cassia mollis* Vahl., *Cathartocarpus grandis* Pres., *Cassia brasiliensis* Lamk., *Cassia achycara* de Wit.

Local name: Pingal Sonalu, Brazilian Sonalu.

English name: Pink Cassia, Brazilian Cassia, Horse cassia.

Taxonomic description: An evergreen to deciduous tree, 15-20 m tall, with buttressed trunk at the base, bark brownish-grey. Leaves paripinnate, stipules 2, minute, rachis 10-25 cm long, without glands, leaflets 10-20 pairs. Flowers 1.5-2.0 cm across when open, showy, first red, later on pink, finally orange. Fruit a pod, cylindric-oblong, woody with hard testa. Seeds 20-40 per pod, embedded in pulp with disagreeable smell.

Native: Native of South and Central America and Caribbean Isles, widely cultivated in the tropics. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: February to August.

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: In India, the bitter pulp of the pod is used as a purgative and more effective than that of *Cassia fistula* (Benthall, 1933).

3.9. *Cassia javanica* L.

Synonyms: *Cassia bacillus* Roxb., *Cassia javanica* subsp. *Javanica* K. Larsen.

Local name: Java Sonalu, Bandarlatka

English name: Java Cassia, Apple Blossom

Taxonomic description: A fast growing deciduous tree, 5-20 m tall, with short trunk and spreading canopy, bark dark brown and smooth, branches nearly glabrous. Leaves paripinnately compound, rachis 20-30 cm long, leaflets 10-20 pairs, elliptic-ovate to oval oblong. Flowers rosy-pink. Fruit a pod, cylindrical-oblong, woody, dark brown to glossy black, chambered within, indehiscent, 50-70 seeded. Seeds flat, glossy, brown, corky, more or less orbicular, embedded in flat disc.

Native: Africa, Bhutan, Cambodia, India, Indonesia, Laos, Myanmar, Malaysia, New Guinea, Pakistan, the Philippines, Sri Lanka, Thailand and Vietnam. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: March to June.

Chromosome number: $2n = 28$ (Jacob, 1940).

Medicinal Uses: Not Known.

3.10. *Cassia renigera* Wall ex Benth.

Synonym: *Cassia javanica* L. subsp. *renigera* (Wall. ex Benth.) K.Larsen.

Local name: Burmese Pink Cassia

English name: Burma Sonalu

Taxonomic description: A small deciduous tree, 6-8 m tall, with spreading and drooping branches. Leaves paripinnately compound, rachis 20-32 cm long, leaflets 8-20 pairs, elliptic-oblong, obtuse, softly pubescent, stipules 2, large, reniform. Flowers pink, scented. Fruit a pod, cylindrical-oblong, woody, indehiscent.

Native: India, Malaysia, Myanmar and Pakistan. It is a native upper Myanmar in dry zone. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: April to August.

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: Not Known.

3.11. *Delonix regia* Raf.

Synonym: *Poinciana regia* Boj. Ex Hook.

Local name: Krishnochura

English name: Flame Tree, Peacock Tree.

Taxonomic description: A medium sized, handsome, deciduous tree, up to 20 m tall. Leaves bipinnately compound, main rachis 50-60 cm long, pinnae 11-18 pairs, up to 10 cm long, leaflets 15-30 pairs. Flowers showy, large, 7-12 cm across, scarlet, orange, or brown and white variegated. Fruit a sessile pod, linear-oblong, flattened, woody, blackish when dry. Seeds 20-40 per pod, elliptic-oblong, slightly compressed.

Native: A native of Madagascar, distributed in Bhutan, India, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: April to September.

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: Not Known.

3.12. *Peltophorum pterocarpum* (DC.) K. Heyne.

Synonyms: *Inga pterocara* DC., *Caesalpinia inermis* Roxb., *Peltophorum inermis* Roxb., *Peltophorum roxburghii* G.Don., *Peltophorum ferrugineum* (Decne) Benth.

Local name: Holud Krishnachura

English name: May Flowers, Yellow Gold Mohor, Yellow Flame Tree.

Taxonomic description: A large, handsome, semi-evergreen, tree up to 35 m high. Leaves compound, bipinnate, stipulate, stipules 3-5 mm long. Flowers golden-yellow, sweet scented. Fruit a pod, shield shaped, flat, reddish brown. Seeds 1-4 per pod, oblong, light brown, arranged longitudinally within the pod.

Native: Native of Andaman's Coast. It is distributed in Australia, Cambodia, Indonesia, Malaysia, Singapore, Sri Lanka, Thailand and Vietnam. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: March to August

Chromosome number: $2n = 26$ (Bir and Kumari, 1975).

Medicinal Uses: The bark is used to cure dysentery and is applied externally as a lotion for sprains, muscular pain and ulcers. This is also used to make eye lotion and tooth powder (Burkill, 1935).

3.13. *Saraca indica* L.

Synonyms: *Saraca bijuga* Prain, *Saraca harmandiana* Pierre, *Saraca pierreana* Craib.

Local name: Ashok

English name: Ashoka Tree

Taxonomic description: An ornamental tree, up to 24 m high. Leaves large, aripinnately compound, alternate, stipulate, stipules caducous, rachis up to 32 cm long. The flowers display a lot of different colors. Young flowers are yellow that later acquire hues of orange and then ultimately become crimson with the passage of time. The colorful stamens of Ashoka flowers form a ring of white and crimson shades and give a hairy appearance to the flowers. Fruit a pod, oval to oblong-lanceolate, cuneate or rounded at the base and beaked at the apex.

Native: South Asia including India, Indonesia, Laos, Malaysia, Myanmar, Sri Lanka and Vietnam. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: February to June

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: A decoction of the bark mixed with milk is prescribed for uterine affections especially in menorrhagia. The pounded flowers mixed with water are used in hemorrhagic dysentery in India (Caius, 1989).

3.14. *Senna alata* (L.) Roxb.

Synonym: *Cassia alata* L.

Local name: Dadmardan

English name: Ringworm Bush, Ringworm senna

Taxonomic description: A large shrub. Leaves compound, 30-60 cm long; leaflets 8-12 pairs, oblong-obtuse, 5-15 cm long. Flowers showy, in spiciform, pedunculate, erect, racemes; petals bright yellow, broad-ovate. Pods 10-20 cm long, linear-oblong, with a broad wing down the middle of each valve, membranous.

Native: It is native to Mexico. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: September to January

Chromosome number: $2n = 12$ (Senn, 1938).

Medicinal Uses: Leaves are purgative and antiparasitic; bruised into paste is specific for ringworm; decoction is a general tonic, considered cure for herpes, venereal diseases and poisonous insect bites. Decoction of the leaves and flowers is used as a mouth-wash, wash for eczema, expectorant in bronchitis and astringent in stomatitis. Stem bark is also efficacious against eczema (Ghani, 2003).

3.15. *Senna siamea* (Lamk.) Irwin & Bar.

Synonyms: *Cassia siamea* Lamk., *Senna sumatrana* Roxb.

Local name: Minjiri

English name: Thailand Cassia

Taxonomic description: A first growing evergreen tree, about 18 m tall, branches spreading, young shoots ribbed. Leaves paripinnately compound. Flowers yellow. Fruit a pod, linear-oblong, flat, apiculate, velvety brown with depression between the seeds, thickened at both sutures, dehiscent, 20-30 seeded. Seeds light brown to blackish brown, glossy, very flattened, pentagonally oval-elliptic.

Native: Native of Myanmar, distributed in Cambodia, India, Indonesia, Malaysia, New Guinea, Laos, the Philippines, Sri Lanka, Thailand and Vietnam. In Bangladesh, this species is planted all over the country (Ahmed *et al.*, 2008).

Flowering time: January to December

Chromosome number: $2n = 28$ (Jacob, 1940).

Medicinal Uses: The pest of seeds with black pepper (*Piper nigrum*) in 5:1 ratio is prescribed orally with water to stop vomiting in Orissa of India (Srivastava and Rout, 1994).

3.16. *Senna sophora* (L.) Roxb.

Synonyms: *Cassia sophora* L., *Cassia lanceolata* Link, *Senna esculenta* Roxb.

Local name: Kolkashundha

English name: Pepper-leaved Senna

Taxonomic description: A diffuse undershrub, 2.4-3 m high. Leaves compound, 18-23 cm long; leaflets 6-10 pairs, 3.8-6.3 cm long, lanceolate, acute or acuminate. Flowers in axillary, short, few flowered, corymbose racemes. Petals 5, 1.3 cm long, ovate, obtuse, yellow. Pods 7.5-10 cm long, thick, slightly recurved, somewhat turgid.

Native: Native of tropical Asia or America, distributed throughout the tropics as pantropical weed in Africa, Brazil, Bhutan, Ethiopia, Ghana, India, Indonesia, Ivory Coast, Nepal, New Guinea, Nigeria, Somalia, Thailand and Vietnam. In Bangladesh, this species is wild all over the country (Ahmed *et al.*, 2008).

Flowering time: September to July

Chromosome number: $2n = 28$ (Irwin and Turner, 1960).

Medicinal Uses: Leaf juice is specific for ringworm; used in asthma, bronchitis and hiccup. Infusion of the leaves is useful in gonorrhoea and syphilitic sores. Bark, leaves and seeds are used as a cathartic; given in diabetes. Root bark ground into a paste is an application for ringworm, pityriasis and psoriasis (Ghani, 2003).

3.17. *Senna occidentalis* Roxb.

Synonyms: *Cassia occidentalis* L., *Cassia foetida* Pers.

Local name: Bara kolkachunda

English name: Foetid Cassia, Rubbish Cassia

Taxonomic description: An erect, branched, suffrutescent herb, 1-3 m high, often shrubby. Leaves paripinnately compound, stipulate, stipules 2, rachis 10-15 cm long. Flowers yellow. Fruit a pod, oblong, flattened, slightly falcate or not. Seeds 20-30 per pod, pale brown, ovate, compressed with areole at the centers.

Native: Native of South America, now pantropical weed throughout the tropics and temperate regions. In Bangladesh, this species is wild all over the country (Ahmed *et al.*, 2008).

Flowering time: May to October

Chromosome number: $2n = 28$ (Bir and Kumari, 1980).

Medicinal Uses: The whole plant is purgative, tonic and febrifuge. In Brazil, an infusion of the root bark is used as a tonic and diuretic (Caius, 1989).

3.18. *Senna tora* (L.) Roxb.

Synonym: *Cassia tora* L., *Cassia humilis* Coll.

Local name: Chakunda

English name: Foetid Cassia, Sickie Senna

Photographs of Plant Species



Bauhinia acuminata



Bauhinia purpurea



Bauhinia variegata



Brownea coccinea



Caesalpinia pulcherrima



Caesalpinia bonduc



Cassia fistula



Cassia grandis



Cassia grandis



Cassia javanica



Cassia renigera



Delonix regia



Peltophorum pterocarpum



Senna sophora



Senna tora



Senna occidentalis

*Senna alata**Senna siamea**Saraca indica**Tamarindus indica*

Taxonomic description: A perennial, erect, foetid, often profusely branched herb or undershrub, about 30-100 cm tall. Leaves paripinnately compound, rachis 5-10 cm long. Flowers yellow. Fruit a pod, linear-oblong, terete to sub-tetragonous, straight or curved, dehiscent, 20-30 seeded. Seeds dark brown, glossy, rhomboidal, with 1.5-2.0 mm wide areole on both surfaces, sometimes areoles almost as wide as the seed surfaces.

Native: Bhutan, India, Malaysia, Nepal, Pakistan, the Philippines and Thailand. In Bangladesh, this species is wild all over the country (Ahmed *et al.*, 2008).

Flowering time: July to December

Chromosome number: $2n = 28$ (Sareen and Pratap, 1975).

Medicinal Uses: Leaves are laxative, antiperiodic, aspirant and anthelmintic. Seeds are used as tonic and stomachic. Leaves and seeds are recommended for the treatment of skin diseases like ringworm, scabies, itch and leprosy (Ali, 1973).

3.19. *Tamarindus indica* L.

Synonyms: *Tamarindus occidentalis* Gaertn. *Tamarindus officinalis* Hook. f.

Local name: Tentul

English name: Tamarind

Taxonomic description: A large handsome, evergreen tree, 12-18 m high with round bushy crown and comparatively smaller bole. Leaves peripinnate, 5-12.5 cm long; leaflets small, 10-20 pairs, linear oblong, slightly notched at the apex. Flowers in terminal, lax, few-flowered racemes; petals 1 cm long, subequal, yellowish with pink stripes. Fruit a pod, 7.5-20 cm long, indehiscent, slightly curved subcompressed, with very acidic pulp.

Native: Probably the native of Tropical Africa widely cultivated in different parts of the world. In Bangladesh, it occurs throughout the country (Ahmed *et al.*, 2008).

Flowering time: April to December

Chromosome number: $2n = 24$ (Atchison, 1951).

Medicinal Uses: The leaves are used to wash wounds and to reduce inflammation. The pulp of the fruit is often eaten as a laxative, and the seeds are recommended for the treatment of dysentery. The bark is tonic and astringent, and said to restore sensation in case of paralysis. Washing of hairs with pulp-soaked water removes dandruff. Drink of pulp lowers blood cholesterol. Gargle with tamarind water is useful in sore throat. Seeds are astringent; used for diarrhea (Ghani, 2003).

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